

Carnegie Lake Interagency Workgroup - Field Visit
October 12, 2004
Field Notes

Attended by: Chris Altomari, SBMWA; Mark Gallagher, Princeton Hydro; Megan Grubb, USACE; Fred Lubnow, Princeton Hydro; Bob Ortega, Princeton University; and Carlo Popolizio, USFWS.

Meeting Purpose: Restoration Site Opportunities Assessment

Carnegie Lake Parking Area - Rt 27 - North end of lake

1. The field visit began with discussion of potential improvements to the Rt 27 parking lot area to minimize sedimentation into the lake and for other environmental benefits. The lot, which is owned by Princeton University, is open to the public for lake access and boat ramp use. The parking lot is currently dirt with gravel and parking spaces and drive patterns are not delineated. The following ideas were proposed:
 - Placement of additional gravel material or crushed shell to prevent windblown soils and sedimentation via runoff. Bob Ortega mentioned that this effort could be considered and accomplished by the University.
 - The proximity to the water's edge and the approvals that would be required for a plan from State and local (zoning, etc.) entities was mentioned.
 - Installation of parking lot swales and sediment basins for settling of sediment from runoff was discussed. The basins typically would be car-sized with three subchambers and would require twice yearly maintenance. Material could be vacuumed out of the sediment trap with a vac truck. Maintenance was discussed as an issue. Designing a self-sustaining system or plan would be preferred by the University rather than taking on additional upkeep tasks. The University runs self-sufficient from the township.
 - Reduction of parking lot size was proposed. The parking lot had been expanded for bridge replacement by DOT on Rt. 27. As a follow up to the visit, parking lot usage information was obtained. The lot is used for general parking, boat trailers and is also heavily used during regattas. Spectators for University rowing events use the parking area, and the University is considering a potential grandstand construction at the lot for such occasions. Size minimization may not be feasible due to usage and size of equipment.
 - Establish native grasses or additional woody vegetation as parking lot buffer. The area is currently trodden lawn grass. Views of the lake and access points for fisherman and visitors would need to be taken into consideration for installation of taller vegetation. Space for sunbathers was also mentioned.
 - It was pointed out that if parking spaces were delineated with blocks and a traffic direction (entrance/exit) was established, people could be prevented

or discouraged from parking on grassed slope and restricted to the gravel lot. Large blocks had been placed by the University in the past few years to keep cars off of the grass buffer on the lakeside of the parking area. As discussed as a follow-up to the field visit, it is preferable to use recycled plastic technology for parking blocks rather than treated wood products that could potentially leak chemicals such as arsenic. Rutgers is known for its use/development of recycled plastic technology. Carlo Popolizio identified that recycled plastics were used for a bridge project in the Pinelands. The products can have a 50 year+ life.

- Any parking lot plan would also need to be coordinated with the neighbors. The neighbors may have useful information on parking lot usage numbers.
- Environmental enhancement at this lot could be a real community focal point.
- There was much discussion of volunteer entities to participate in planting such as garden clubs, University landscape architecture students, girl scouts and Princeton students.
- Chris Altomari discussed some of the recent nearby projects at Mountain Lake and a project near Town Hall and Rt. 206. Geese had been an issue at one site. Fencing would be a necessity.
- Fencing the area temporarily was also discussed as a visual reference for maintenance mowers.
- It was presented that solids input is more of an issue for the lake than nutrients. Due to the high flushing rate of the lake, higher nutrient levels do not result in algal blooms.

2. Discussion of lake invasive plants and potential public outreach program.

- While at the lot, lakeside environmental management was covered. Chris Altomari described some of the SBMWA invasive plant educational outreach programs. A "River Friendly" brochure is used to give property owners information about awareness and steps that they can take to help the environment. In the past, the Association has had a plant sale where a truck is used to bring plants to the homes. A short list of appropriate plant material is sent to the homeowners.
- Ideas: targeted brochure for lakeside residents, plant sale, & volunteer invasive plant removal.
- Purple loosestrife was identified as a problem for the area. Hand pulling is recommended when the plant is just becoming established. Difficult to remove (many roots and brittle). The plant should be bagged up and removed to prevent reestablishment and seed spread. Herbicide can be used if plant is established over an area. "Habitat" is a type of herbicide application that could be used, but care has to be taken to allow some time before replanting to prevent toxicity to new plants. Beetles have been used at Colonial Lake. If biomanipulation with beetles is undertaken, the seed source still has to be removed to prevent reestablishment. Use of beetles can be expensive with

costs of a \$1 a beetle. Hand pulling is the preferred control method near aquatic areas to avoid impacts to fisheries and wildlife.

Harry's Brook at Rt 27 and at Poe Rd. crossing - Inlet Station #1

1. There is a delta of sediment as Harry's Brook enters the lake.
2. Invasive plants were observed around Rt. 27 within the Brook's floodplain.
3. It was pointed out that Harry's Brook is under evaluation by the NRCS to look at flooding problems along Poe Road.
4. At the Poe Road crossing, the stream looked very different on the north side of the bridge than on the south. On the south side, the bank vegetation included shrub growth and the stream looked healthy without erosion. Fish life was evident. On the north side, and on the downstream end of the bridge crossing, some erosion issues were observed. There appeared to be a bar of rock and sediment that deposited. Flow was directed towards the east bank and was also cutting at the east abutment. Rock on the west/northwest riverbank was preventing toe erosion, although some upper bank erosion was observed.
 - Deciduous trees shade the area. Vegetative stabilization would be difficult. Some additional rock could be used for stabilization.
 - Sediment/rock deposit material could be removed or moved.
 - A bendway weir or rock vein could be used to direct flow away from east abutment.
 - The nature of the stream is probably flashy. Upstream is developed and could be visited to look at streamside uses at apt. complex, etc. Some instream/riverbank stabilization work could be done at this location, but the "flashy" nature of the stream could destabilize the area in the future.
5. Evaluation of restoration opportunities on Harry's Brook or other tributaries could be expanded through a longer stream walk for restoration/stabilization site identification, prioritization of sites, and also could be analyzed/modeled further through a Rosgen approach or other methodology.

Station #2 at Broadmead Street

1. Flow at this location is predominantly from a corrugated pipe outfall. The area was recently stabilized with gunnite (concrete and riprap material). Some of the gunnite was being undermined/eroded. A sediment basin feeds to this inlet.

University Sediment Basin on Broadmead Street

1. The sediment basin had been recently cleared out (within the last 3-4 weeks), therefore dirt was exposed and grass was just getting reestablished in areas. A concrete low-flow channel was carrying considerable water flow for a non-rain day. University property has many groundwater/underground springs that may contribute to the continuous flow.

- Retrofit of the basin as a "wet basin" with wetland plantings was discussed. The basin seemed a perfect candidate, as some of the existing grasses were wetland plants. Princeton Hydro described some wet basin projects in Pennsylvania.
- A sediment forebay could be established where solids would fall out. This area could be maintained. The rest of the basin could be seeded or planted as natural wetland habitat. The area could be designed to avoid open, stagnant water that would be a concern for mosquito issues.
- Another idea was proposed about check dams or baffles instead of a straight-run concrete low flow channel to dissipate energy.
- The University could likely take on this retrofit if ideas were presented. Princeton Hydro could provide illustrations of the PA basin(s).

University Sediment Basin at the Hibben-MacGie Apartment Complex

1. Dissimilar to the previous stormwater sediment basin, this basin was dry and fully grassed. Would not be as great a candidate for wetland habitat retrofit.

Station #3 Inlet at Hibben-MacGie Apartments

1. When sampled during the water quality data collection period, this unnamed tributary had higher phosphate and sediment numbers. The stream receives flow from on campus, directed via underground pipes to outfall. Some erosion was observed near the outfall and stream (leaning trees downstream). Little understory growth at stream.
 - Suggestions for improvement included use of riprap near outfall for stabilization; fencing off area to restore understory vegetation; and moving picnic grill away from riverbank.

Millstone Wetland Complex between Rt. 1 and D&R path

1. The shallow lake/wetland area was discussed as an important fisheries area, as well as important to other wildlife include waterfowl, reptiles and amphibians.
2. Nitrate input was higher from the Millstone. The testing that showed higher nitrate could be partially attributed to nitrification in this wetland area during the growing season. Further testing and analysis would be required to review this.
 - There was discussion of installation of a sediment forebay for solids collection.
 - The east side of Rt 1 at the FMC and Sarnoff Property could be improved through installation of lakeside vegetation. The properties may have sediment contamination issues. Lakeside vegetation could help control the goose population.

Field Meeting concluded.

Post-meeting, an eagle was observed from the Rt 27 parking lot. Station #3 at Quaker Road & the Stony Brook was visited post-meeting by Megan Grubb. A large amount of woody debris had built up on the south side of the bridge crossing. Erosion was occurring north of the bridge. The area should be cleared. Invasive plants (knotweed) were observed in the riparian corridor. The stream deciduous tree vegetative buffer could be widened as the surrounding land use was farmfield/meadows. Signs were observed in the area for Green Acres, Institute for Advanced Study Property, & Historic Battlefield.